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ABSTRACT

To establish an objective measure of English skills for graduation candidates and to determine whether objective and subjective measures of English skills produce different results, 101 volunteers completed a writing sample and the Reading and Written English Expression tests of the Comparative Guidance and Placement Program (CGP). Scores obtained on the three measures were analyzed by sex, ethnic origin, high school and college grade point average, high school English grade point average, and college English courses completed. Analysis of the data showed: (1) the graduation candidates scored slightly higher than national norms for the Reading and Written Expression tests of CGP; (2) those who completed a freshman composition course scored much higher than those who completed one or more remedial English courses and significantly higher than the mean of the national norm group, while the remedial English group scored significantly below this mean; (3) minorities as a group, except Asians, appeared to be less prepared for college-level English; (4) no significant differences in English skills based on the type of remedial English completed; and (5) no significant differences in mean scores among the three measures. Criteria for scoring the writing samples and other study-related materials are appended. (MB)

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ENGLISH SKILL LEVELS OF REEDLEY COLLEGE GRADUATION CANDIDATES, 1977-78

Submitted by:

MOIRE C. CHARTERS

October 6, 1978

JC 780 497

INTRODUCTION

During the spring semester 1978, 575 students at Reedley College applied for an associate degree. Of this number, 101 students were administered the Reading and the Written English Expression tests of the Comparative Guidance and Placement Program (CGP). One hundred (100) of the 101 students also completed a writing sample. Each of the CGP tests took 25 minutes to complete; twenty-five (25) minutes were also allowed for the writing sample.

This paper details the results of this language skills testing program.

The original purposes of this study were to establish an objective measure of English skills for graduation candidates; to compare the skill level with the norming group; to determine if a best way exists to improve English skills; and to determine if objective (standardized test) and subjective (writing sample) measurement of English skills produce similar results.

PROCEDURE

Each graduation candidate was contacted by personal letter and requested to participate in the testing program; two (2) follow-up letters were sent. The final outcome was that 101 students participated in the testing program. The fact that only volunteers participated in the testing may have introduced a bias into the study; this possible bias was investigated by comparing the college grade point averages of the 101 students in the sample with a similar number of graduation candidates randomly selected that did not participate in the testing. No statistically significant difference was found (Appendix A); that finding coupled with the size of the sample resulted in proceeding on the assumption that the 101 students in the sample were representative of the entire population of students who applied for graduation.

The CGP tests were self-scoring forms and the scoring was completed on campus. Raw scores were used in calculating the statistical tests; some arithmetic means were converted to standard scores for the purpose of comparing sample means with population means by use of a Z-test.

The writing test was scored by two community college instructors from a near-by, non-district college; both instructors have taught English in the community college for over ten (10) years. To further insure uniformity in scoring the writing sample, directions for holistic reading and a composition rubric were provided (Appendix B). Each writing sample was read at least twice; the final score assigned was the arithmetic mean of all scores assigned.

In addition to the three test scores, information on sex, ethnic origin, high school grade point average, college cumulative grade point average, high school English grade point average, and college English courses completed was also compiled for each candidate (Appendix C).

Various sub-groups were formed on the basis of each of the characteristics mentioned. Ethnic origin resulted in six (6) sub-groups: Mexican-American, Other White, Black, Oriental, American Indian and Other Non-White. Sub-groups of male and female were created. Eight sub-groups were formed on the basis of the highest English course completed in college (Appendix D). Each of the sub-groups, sixteen (16) in all, were analyzed concerning the sub-group's performance on each of the three tests, the total of the tests, and also concerning high school and college grade point averages and high school English grade point average. Over 360 chi-square analyses were performed to discover significant relationships.

RESULTS

1. WRITTEN ENGLISH EXPRESSION AND READING

The first comparison was to see if a difference exists between the sample group at Reedley College (S) and the norm group in the performance on the two tests of CGP.

The group used to establish the norms for CGP included 30,039 students who were enrolled or entering 114 different community colleges or vocational-technical institutes primarily on the East coast. Some characteristics of the students in the norm group as described in the booklet, Using and Interpreting Scores on the CGP Self-Scoring Placement Tests in English and Mathematics, published by the College Entrance Examination Board, 1976, are:

> Minority students made up one-fourth of the sample. One-percent (1%) was Mexican-American.
>
> Nearly one-third of the sample reported parental income of below $9,000 and less than half of the sample reported parents' occupation as being professional.
>
> Less than half the sample was entering the college directly from high school.
>
> High school grades were mainly B to C level.

The characteristics of the S's (101 students) show thirty percent (30%) Mexican-American plus fifteen percent (15%) additional minority students. This characteristic is markedly different from the norm group. For other characteristics see Appendix C.

Table 1

	S (101)	Norm Group (30,039)
Mean Standard Score Written English Expression	50.88	49.22
Mean Standard Score Reading	50.08	48.02

The S group had a higher mean score on both tests, but the difference was not statistically significant. (Appendix E).

The question of whether an actual increase in English skills took place is not addressed by this comparison. This fact is reinforced by comparing the mean scores of part of the S group that completed the traditional English 1A, Freshman Composition, course without first taking remedial English with the mean scores of the norm group.

Table 2

	English 1A S (42)	Norm Group
Mean Standard Score Written English Expression	61.21	49.22
Mean Standard Score Reading	57.96	48.02

The S group had a much higher mean score on both tests that is statistically significant at the .001 level of confidence.

A comparison of the mean scores of a part of the S group who completed a remedial English course at Reedley College with the mean scores of the norm group will complete the picture.

Table 3

	Remedial English S (46)	Norm Group
Mean Standard Score Written English Expression	45.82	49.22
Mean Standard Score Reading	44.67	48.02

The S's had a lower mean score on both tests that is statistically significant at the .05 level of confidence.

The comparisons above are markedly different but none indicate a loss or a gain in English skills while at Reedley College but by a single statistic show how the S group compares with the norm group.

2. THE WRITING SAMPLE

The purpose of including the writing sample was to see if a difference in English skills would emerge depending upon how the skills were measured. The scores on theCGP test of English Expression show a high degree of correlation (r=.80) with the writing sample (Appendix F). A comparison of the mean scores indicates no significant difference.

This is not to say that an individual student's performance will not continue to vary with the type of test, but only that in describing the English writing skill level of a group of students either the objective standard test or the subjective writing sample would equally establish a reliable statistic.

3. ANALYSIS OF SUB-GROUPS

The basic method of setting up the chi-square tests by which relationships between sub-groups were made apparent was to calculate the mean score or

performance on a variable and divide the sub-group on the basis of whether an individual was above or below the mean. The other side of the chi-square block would consist of the two sub-groups to be compared. For example, the performance on the CGP test of English Expression of those students who completed on English 1A versus those who completed only English A would be set up as follows:

	+ M	- M	
English A	3	12	15
English 1A	24	5	29
	27	17	44

By using the appropriate formula, a value can be obtained and a determination made from a table if a statistically significant difference exists. Over 350 of these tests were performed. Significant differences were found in 112 of these tests. (Appendix G).

A summary only will appear here.

A. Differences by Sex

There were no sex differences in performance on the three tests. The only significant difference was that females enter college with higher high school English grades than do male students.

B. Differences by Ethnic Origin

There were no significant differences between other whites and orientals.

Mexican-Americans have significantly lower high school and college grade point averages than do other whites and orientals. Mexican-Americans also score significantly lower on all three tests than do other whites. Reading scores are below all other ethnic groups except Blacks, where there is no significant difference.

Blacks have lower high school grade point averages than do orientals and have lower college grade point averages than do other whites and orientals.

The number of minorities in each group is relatively small except for Mexican-Americans. The small numbers should be considered in interpreting these statements.

C. Differences by College English Experience

A student at Reedley College may decide not to take any English at all and still apply for graduation; nine (9) students in this study chose this option. A student may take one or more remedial English courses; fifty (50) students in this study chose this option. A student, if eligible, may enroll for English 1A; forty-two (42) students chose this option.

Two (2) of the eight (8) sub-groups in this area are concerned with students who began by enrolling in English 1A. One (1) sub-group includes students who are eligible for graduation by virtue of strong high school grades in English. The other five (5) sub-groups include a combination of remedial English courses, primarily English 50 and English A.

In terms of preparation, all remedial sub-groups had significantly lower high school grade point averages and lower high school English grades than did the non-remedial sub-groups.

In terms of achievement in college, all remedial sub-groups had significantly lower college grade point averages than did non-remedial sub-groups.

In terms of performance on the CGP tests, all remedial sub-groups scored significantly lower on the Reading and the Written English Expression tests than did the non-remedial sub-groups.

In terms of performance on the writing sample, all remedial sub-groups scored significantly lower than did non-remedial sub-groups.

The results are somewhat startling in their consistency, but hardly surprising in confirming that students who have done better in previous school experiences continue to do well and do not enroll in remedial English courses.

CONCLUSIONS

An objective measure of English skill levels has been established. Reedley College graduation candidates score slightly higher than national norms for the Reading and Written English Expressions tests of CGP. Those who complete English 1A, Freshmen Composition, score much higher than those who complete one or more remedial English courses, and significantly higher than the mean of the norming group, while the remedial English group score significantly below this mean.

A twenty-five minute writing sample can be used to effectively determine English skills. Objective multiple choice tests results correspond to the subjectively scored writing sample. No doubt the type of test administered still makes a difference to individuals.

Minorities as a group, except orientals as a group, appear to be less prepared for college level English.

Significant differences in English skills based on the type of remedial English completed did not emerge. It appears that students who are in need of remedial English generally perform less successfully in college than do other students.

The report does address all the original objectives of the study and while it may not provide definitive answers to any of the inquiries, it does provide information that can be useful in making additional English studies at Reedley College.

COMPUTATION OF Z-TEST FOR COLLEGE GPA COMPARISON*

$$Z = \frac{(\bar{X} - \bar{Y})}{\sqrt{\frac{SX^2}{N} + \frac{SY^2}{N}}}$$

$\bar{X}$ = MEAN GPA OF STUDENTS IN STUDY = 2.87

$\bar{Y}$ = MEAN GPA OF STUDENTS NOT IN STUDY = 2.74

SX = STANDARD DEVIATION OF X = .589

SY = STANDARD DEVIATION OF Y = .531

N_x = NUMBER = 101

N_y = NUMBER = 99

$$Z = \frac{(2.87 - 2.74)}{\sqrt{\frac{(.589)^2}{101} + \frac{(.531)^2}{99}}}$$

$$Z = 1.717$$

To indicate significance at .05 level, a Z value of 1.96 would be needed*

*Allen L. Bernstein, A Handbook of Statistical Solutions For The Behavioral Sciences. New York: Holt, Rinehart and Winston, Inc. 1964.

REEDLEY COLLEGE

Directions For Holistic Reading Of Student Writing

We suggest that the readers of the papers work together with eight or ten papers, so that some consistency of expectation and response to the papers can be developed. We include copies of student writing from our English Placement Writing Sample to be used for these practice readings. Readers should note, however, that the Writing Sample is written in an hour, while the papers in this survey were written in twenty-five minutes. Also, the Writing Sample is written by students hoping to qualify for English 1A, while our survey is of students hoping to graduate at the end of the semester in which the survey was taken.

The student papers should be assigned a level from 5 to 1, with 5 being the highest score. The five levels are described on the attached composition rubric, which is used by permission of Kern High School District. Every paper will be read by two readers. If the levels assigned one paper differ by two or more levels--a 2 and a 4, a 3 and a 5, a 1 and a 4, for example,--the paper must be read by a third reader. All scores will be recorded on the Writing Sample Score Sheet by student number and by reader identification.

The final score for each paper will consist of the arithmetic mean of all scores assigned to the paper.

REEDLEY COLLEGE

Composition Rubric

A Level Five (5) Paper:
1. Will address itself solely to the assigned topic.
2. Will have a logical organization of ideas.
3. Will have effective word choice.
4. Will include a substantial variety of sentence structures/patterns.
5. Will contain a minimum of mechanical errors.
6. Will display a sophistication in choice of supportive material that is complete, relevant, and convincing.

A Level Four (4) Paper:
1. Will address itself to the assigned topic.
2. Will have a logical organization of ideas.
3. Will have reasonably effective word choice.
4. Will include a variety of sentence structures/patterns.
5. Will contain a minimum of mechanical errors.
6. Will include supportive material that is complete, relevant, and convincing.

A Level Three (3) Paper:
1. Will respond to the assigned topic.
2. Will have discernible organization.
3. Will have adequate word choice.
4. Will primarily contain complete sentences.
5. May contain mechanical errors which do not significantly interfere with meaning.
6. Will include supportive material.

A Level Two (2) Paper:
1. May ramble or stray from the assigned topic.
2. May be weak in organization.
3. May lack clarity and/or variety in word choice.
4. May tend toward frequent errors in sentence structure.
5. May contain mechanical errors which interfere with meaning.
6. May lack supportive material.

A Level One (1) Paper:
1. May ramble or stray from the assigned topic.
2. May be lacking in organization.
3. May lack clarity and/or variety in word choice.
4. May tend toward frequent errors in sentence structure.
5. Will contain serious mechanical errors which interfere with meaning.
6. Will lack supportive detail.

A Level Zero (0) Paper:
1. Does not respond sufficiently to the topic to qualify the paper for evaluation.

ENGLISH TEST AND WRITING SAMPLE

You are participating in a Reedley College survey to improve our program of language skill classes. While this survey will in no way affect your grade or record, please make this an example of your best work.

Since others will participate in this survey at another time, please do not discuss any part of it after your work is completed.

WRITING

Plan and write a short essay on one of the following topics. You will have twenty-five minutes in which to write. Write clearly in ink (or dark pencil) on the paper which is given to you.

Choose One

1. Imagine that the job you really want is offered to you, but to accept it you must move far from home and family. Will you take the job? Explain how you would reach your decision.

2. Discuss one change in society that you have noticed and welcome--or one change that you have noticed and hate to see. Explain what the change is and how you feel about it.

3. Discuss one thing you expected your education to do for you. Has your education done or provided this? Explain.

Read your paper carefully before submitting it. Correct any error or oversight you find.

STUDENT LIST

SEX	ETHNIC	H.S. GPA	COL GPA	ENGLISH				H.S. ENGL	TEST SCORES		
				50	A	1A	1B		MECH RS	WRIT	READ RS
F	1	2.63	1.94	CR				C	15	1.5	15
F	1	2.20	2.36		B			CCCB	26	2.5	24
F	1	2.51	2.09						30	0	16
F	2	3.44	3.41			B		BBAB	34	3.5	34
F	1	3.53	3.28			B		BBBB	27	1.0	28
M	2	2.39	3.56		A	A		BCAC	37	4.0	35
F	2	2.66	2.68	CR				CCCC	26	2.0	28
F	2	3.18	3.26					AAAA	34	4.0	34
M	2	2.52	2.35	CR				BD	11	1.0	6
M	2	1.69	2.68	CR					23	3.0	17
F	2	3.00	3.03			B		CBAB	28	3.0	26
F	2	3.58	3.54			B	B	AAAA	30	4.0	28
M	1	2.55	2.13		C	D		CCBB	26	3.0	21
M	2	2.86	3.25		B	C		C	19	2.5	25
F	1	2.40	2.25	CR				BBBB	19	1.5	12
F	2	3.04	3.34					ABC	25	2.5	27
F	2	3.20	3.29			A			37	4.0	34
F		3.53	2.66			B		AABA	35	4.0	31
F	1	3.26	2.07			C		AABB	29	3.0	23
M	1	2.45	1.95	CR				CCBC	23	1.0	19
F	1	2.75	2.40		C			DDBD	21	2.5	15
M	1	2.56	1.94		C				25	2.5	16
M	2	1.90	1.42	CR	D			C	12	3.0	15
F	2	3.60	3.73			A	B	AAAA	38	3.5	33
M	2	Non Grad	3.00	CR				CC	27	1.0	25
F	2	3.92	3.68			A		B	33	3.5	34

SEX	ETHNIC	H.S. GPA	COL GPA	ENGLISH				H.S. ENGL	TEST SCORES		
				50	A	1A	1B		MECH	WRIT	READ
F	6	3.78	3.90			A		AAAA	30	3.5	34
F	6	3.73	3.37			C		AAAA	26	1.5	25
M	4	2.13	2.11			D			30	1.5	31
F	2	3.43	3.74			C		BBAB	27	3.0	28
M	2	3.48	3.45		A	C		DCBB	28	3.0	25
F	2	3.48	3.94		A	A		AAAA	33	2.5	33
F	2	2.76	3.06		A	C		B	26	2.5	29
M	1	For. Stud	2.89	CR	C	C	C		13	2.0	12
M	5	2.83	2.36		B	C		C	20	2.0	16
M	1	2.85	2.23	CR					21	1.5	14
M	2	3.17	3.39			B	B	AAAA	36	3.0	33
M	1	3.19	2.46			D		AAAB	32	3.5	33
F	1	2.56	2.66					AABB	19	2.5	19
M	1	2.51	2.84	CR				B	15	1.5	11
F	2	3.31	3.11		B	C		CC	24	2.5	14
M	1	Non Grad	2.11	CR					19	2.0	17
F	4	3.02	3.53						38	5.0	34
M	2	3.83	3.09			C		AAAA	33	3.5	
F	2	2.66	2.34		C				29	2.5	24
F	2	2.73	2.08			C		AABB	20	3.0	22
F	2	2.71	2.52		C			BB	24	3.0	28
F	5	3.93	3.58			A	A	AAAA	36	3.5	35
M	2	3.00	3.42		C	D		CC	31	3.0	32
M	2	2.80	3.05			B	C	BBAA	30	2.5	29
F	2	3.75	3.36			B		BAAA	32	4.0	30

SEX	ETHNIC	H.S. GPA	COL GPA	ENGLISH				H.S. ENGL	Test Scores		
				50	A	1A	1B		MECH	WRIT	READ
M	2	3.17	2.75			C		AAAA	30	3.0	28
M	2		3.05			B	C		31	4.0	32
M	2	3.54	3.47		A			BCBB	31	2.0	24
M	2	2.34	3.03					CDCC	25	2.5	22
M	2	3.94	3.89			A		AAAA	35	4.5	35
F	2	2.52	3.51		A	B	A	CBBB	25	3.0	11
F	1		2.60			C			25	5.0	26
F	2	2.51	2.66			C		BBCC	35	3.5	26
M	1	2.76	1.83	CR	D			CCA	28	1.5	28
M	5	3.20	2.91			B	B	BBBA	25	2.5	24
F	2	3.13	3.16	CR				CCCC	26	3.0	23
F	2	3.53	2.91			C		AAAA	24	3.5	14
F	5	3.88	3.70			A	B	AAAA	34	4.0	34
F	1	2.20	2.74		C			CCBC	19	1.5	18
F	2	2.80	2.85		C			BBAA	21	1.5	19
F	2	2.89	2.96		C			BBC	23	1.5	17
F	2	2.41	2.37		C			DDCC	16	2.0	20
F	1	2.45	2.46	CR				C	23	2.5	9
F	1	2.61	1.60	CR				BB	22	2.5	11
F	1	2.85	2.21	CR				CBAB	21	2.0	23
M	1	3.73	3.42			C	CR	AAAA	31	4.0	32
F	1	3.12	3.43			B			30	4.0	22
M	2	3.33	3.62		B	B			28	3.0	35
M	2	3.00	3.32			C		C	37	3.5	34
M	1	1.56	3.62	CR				D	14	1.0	23
F	1	2.56	2.11					BBBB	17	3.0	20

SEX	ETHNIC	H.S. GPA	COL GPA	ENGLISH				H.S. ENGL	TEST SCORES		
				50	A	1A	1B		MECH	WRIT	READ
F	1	2.56	2.23	CR				BBBC	20	1.0	7
F	2	3.15	3.12		B			BBDB	29	3.0	24
M	2	3.60	3.24			B	B	BBAC	30	3.0	28
F	2	2.91	3.01					BBBB	22	3.5	20
F	5	3.00	3.11			B	C	BACB	24	3.0	21
M	2	3.46	3.72			B		B	26	2.5	33
F	6	2.86	2.67		B	C		B	21	2.5	16
M	2	For. Stud	2.52	CR	D				15	3.0	11
M	4	3.06	2.72			C		AAAB	34	3.5	29
F	2	3.16	2.91		C			BBC	21	3.0	25
F	5	3.96	3.95			A	A	AAAA	38	4.5	35
F	2	3.27	2.73			D		BAAA	27	4.0	28
F	1	3.52	2.84		B			BCAA	18	1.5	18
M	2	1.95	3.27			B	B	D	29	4.0	25
M	2	Non Grad	3.18			B		C	31	1.5	32
F	2	-	2.93	B					28	4.0	26
M	2	2.66	3.02		C			CCCC	24	1.0	28
M	2	3.78	3.37			B	B	AABA	33	4.0	31
F	3	2.75	1.97	CR	C			CCCD	15	1.0	-
M	2	3.40	3.13			B	B	CBBA	29	3.0	-
M	3	2.89	2.15	Inc				CCCC	23	2.5	
F	6	3.12	1.96			C		BBAA	33	3.0	
F	1	1.93	2.57		D			DDDC	17	3.0	15
M	1	2.55	2.70		B	B		ACCC	22	-	-

TOTALS

H. S. GPA

N = 93

Mean = 2.74

Standard Deviation = 1.01

COL. GPA

N = 101

Mean = 2.87

Standard Deviation = .589

COL. GPA (not in study)

N = 99

Mean = 2.74

Standard Deviation = .531

READING

N = 96

Mean (Standard Score) = 50.08

Standard Deviation = 7.618

WRITTEN ENGLISH EXPRESSION

N = 100

Mean = 50.88

Standard Deviation = 6.52

WRITING SAMPLE

N = 100

Mean = 29.48

Standard Deviation = 5.60

ENGLISH PLACEMENT

Placement in English 1A, A, or 50, will be determined in any one of the following ways:

1. An ACT score of 20 or higher on the English or Composite section will qualify a student for English 1A.

2. An SAT score of 466 or higher on the Verbal test will qualify a student for English 1A.

3. Grades of "B" or "A" in at least two years' work (in tenth, eleventh, and twelfth grades) in those courses designated by the high school as English courses will qualify a student for English 1A.

4. A writing sample test administered and evaluated by the Reedley College English Department may determine appropriate placement in English 1A, in English A, or English 50.

5. Student recognition of need for review and development of basic English skills may lead the student to choose to take either English A or English 50.

English 1A if the lower division composition and reading course required by most four-year colleges and universities.

English A is designed primarily for students who plan to take English 1A and to transfer to a four-year institution. A student completing English A with at least a "C" grade will be considered eligible to take English 1A.

ENGLISH COURSES

50--Fundamentals of English — 3 Units
Prerequisites: None. Not open to students with credit in English A or 1A.
Each Semester: 2 lecture, 3 lab hours. CR-NC only.
Writint, reading, discussion, and essential language skills, with emphasis on the communication of ideas. Primarily for students in two-year programs. Instructor's recommendation will qualify a student for English 1A.

A--Subject A — 3 Units
Prerequisites: None. Not open to students with credit in English 1A.
Each Semester: 3 hours lecture, 1 hour lab.
Writing skills, including sentence structure, punctuation, capitalization, spelling, and organization. Primarily for transfer students who need additional work in the fundamentals of English before entering English 1A. This course may not be counted toward the graduation requirement if the student has previous credit in English 50.

1A-1B--Composition and Reading — 3-3 Units
Prerequisites: For 1A see English options. For 1B: English 1A.
Each Semester: 3 lecture hours. English 1B may be taken. P-N.
First Semester: Composition and analytical reading, preparation of a research paper, and introduction to the study of literature. Second Semester: Further composition and continued study of literature.

COMPARISON OF SAMPLE MEAN TO POPULATION MEAN

GROUP (NUMBER)	DIFFERENCE BETWEEN MEANS	SIGNIFICANCE
Sample (101) English Expression	+ 1.66	None
Sample (101) Reading	+ 2.06	None
Sub-Sample (42) English Expression English 1A	+ 11.99	.001
Sub-Sample (42) Reading English 1A	+ 9.94	.001
Sub-Sample (46) English Expression Remedial English	- 3.40	.05
Sub-Sample (46) Reading Remedial English	- 3.35	.05

THE SIGNIFICANCE LEVELS WERE DERIVED USING THE FORMULA:*

$$Z = \frac{(\bar{X} - \bar{P})\sqrt{N}}{sd}$$

$\bar{X}$ = Sample Mean
$\bar{P}$ = Population Mean
N = Number in Sample
sd = Standard Deviation of Population
English Expression sd = 9.68
Reading sd = 10.45

* Allen L. Bernstein, A Handbook of Statistical Solutions For The Behavioral Sciences. New York: Holt, Rinehart and Winston, Inc., 1964.

COEFFICIENT OF LINEAR CORRELATION

The formula use for correlation* is given below. Because the numbers were used directly and some of the totals long enough to be cumbersome only the result is shown.

$$r = \frac{N\,(\text{Sum})\,XY - (\text{Sum})\,X\,(\text{Sum})\,Y}{\sqrt{N}\;sd_x\;\sqrt{N}\;sd_y}$$

N	=	Number
(SUM)	=	The sum of x's from i = 1 to n
X	=	Scores on English Expression
Y	=	Scores on Writing Sample
sd	=	Standard Deviation

r = +.798 or .80

*Allen L. Bernstein, A Handbook of Statistical Solutions For The Behavioral Sciences. New York: Holt, Rinehart and Winston, Inc., 1964.

SIGNIFICANT DIFFERENCES BETWEEN SUB-GROUPS AND PERFORMANCES OF SUB-GROUPS

The Chi-square Procedure* resulted in the following differences:

1. Men had a lower High School English GPA
2. More men in English A + 1A
   More women in English A
3. More men in English 50 + A
   More women in English A
4. English A had lower High School GPA than English 1A
5. English A had lower High School GPA than English 1A + 1B
6. English 50 had lower High School GPA than English 1A
7. English 50 had lower High School GPA than English 1A + 1B
8. English A + 1A had lower High School GPA than English 1A
9. English A + 1A had lower High School GPA than English 1A + 1B
10. English 50 + A had lower High School GPA than English 1A
11. No English had lower High School GPA than English 1A + 1B
12. High School grades had lower High School GPA than English 1A + 1B
13. English 50 + A had lower High School GPA than English 1A + 1B
14. No English had lower High School GPA than English 1A + 1B
15. English A had lower High School English GPA than English 1A
16. English A had lower High School English GPA than English 1A + 1B
17. English A had lower High School English GPA than High School GPA
18. English 50 had lower High School English GPA than English 1A
19. English 50 had lower High School English GPA than English 1A + 1B
20. English 50 had lower High School English GPA than High School GPA
21. English A + 1A had lower High School English GPA than English 1A
22. English A + 1A had lower High School English GPA than English 1A + 1B
23. English A + 1A had lower High School English GPA than High School GPA
24. English 50 + A had lower High School English GPA than English 1A
25. No English had lower High School English GPA than English 1A
26. English 50 + A had lower High School English GPA than English 1A + 1B
27. No English had lower High School English GPA than English 1A + 1B
28. English 50 + A had lower High School English GPA than High School GPA
29. No English had lower High School English GPA than High School GPA
30. English A had a lower College GPA than English A + 1A
31. English A had a lower College GPA than English 1A + 1B
32. English 50 had a lower College GPA than English 1A
33. English 50 had a lower College GPA than English 1A + 1B
34. English A + 1A had a lower College GPA than English 1A + 1B
35. English 50 + A had a lower College GPA than English A + 1A
36. English 1A had a lower College GPA than English 1A + 1B
37. English 50 + A had a lower College GPA than English 1A
38. High School GPA had a lower College GPA than English 1A + 1B
39. English 50 + A had a lower College GPA than English 1A + 1B
40. No English had a lower College GPA than English 1A + 1B
41. English A scored lower on English Expression than English 1A
42. English A scored lower on English Expression than English 1A + 1B
43. English 50 scored lower on English Expression than English 1A
44. English 50 scored lower on English Expression than English 1A + 1B
45. English A + 1A scored lower on English Expression than English 1A
46. English A + 1A scored lower on English Expression than English 1A + 1B
47. High School GPA scored lower on English Expression than English 1A
48. English 50 + A scored lower on English Expression than English 1A
49. High School GPA scored lower on English Expression than English 1A + 1B
50. English 50 + A scored lower on English Expression than English 1A + 1B

51. English A scored lower on Writing Sample than English 1A
52. English A scored lower on writing sample than English 1A + 1B
53. English 50 scored lower on writing sample than English 1A
54. English 50 scored lower on writing sample than English 1A + 1B
55. English A + 1A scored lower on writing sample than English 1A
56. English A + 1A scored lower on writing sample than English 1A + 1B
57. No English scored lower on writing sample than English 1A
58. No English scored lower on writing sample than English 1A + 1B
59. English A scored lower on Reading than English 1A
60. English A scored lower on Reading than English 1A + 1B
61. English 50 scored lower on Reading than English A + 1B
62. English 50 scored lower on Reading than English 1A
63. English 50 scored lower on Reading than English 1A + 1B
64. English A + 1A scored lower on Reading than English 1A
65. English A + 1A scored lower on Reading than English 1A + 1B
66. High School GPA scored lower on Reading than English 1A
67. English 50 scored lower on Reading than English 1A
68. No English scored lower on Reading than English 1A
69. High School GPA scored lower on Reading than English 1A + 1B
70. English 50 + A scored lower on Reading than English 1A + 1B
71. No English scored lower on Reading than English 1A + 1B
72. English A scored a lower total than did English 1A
73. English A scored a lower total than did English 1A + 1B
74. English 50 scored a lower total than did English A + 1A
75. English 50 scored a lower total than did English 1A
76. English 50 scored a lower total than did English 1A + 1B
77. English A + 1A scored a lower total than did English 1A
78. High School GPA scored a lower total than did English 1A
79. English 50 + A scored a lower total than did English 1A
80. High School Grades scored a lower total than did English 1A + 1B
81. English 50 + A scored a lower total than did English 1A + 1B
82. Mexican-Americans had a lower High School GPA than other whites
83. Mexican-Americans had a lower High School GPA than Orientals
84. Mexican-Americans had a lower High School GPA than other non-whites
85. Blacks had a lower High School GPA than Orientals
86. Mexican-Americans had a lower College GPA than other whites
87. Mexican-Americans had a lower College GPA than Orientals
88. Blacks had a lower College GPA than other whites
89. Blacks had a lower College GPA than Orientals
90. Blacks had a lower High School English GPA than Orientals
91. Blacks had a lower High School English GPA than non-whites
92. Mexican-Americans scored lower on English Expression than other whites
93. Mexican-Americans scored lower on English Expression than Orientals
94. Blacks scored lower on English Expression than Orientals
95. Mexican-Americans scored lower on the writing sample than other whites
96. Mexican-Americans scored lower on Reading than other whites
97. Mexican-Americans scored lower on Reading than Orientals
98. Mexican-Americans scored lower on Reading than American-Indians
99. Mexican-Americans scored lower on Reading than other non-whites
100. Mexican-Americans scored lower total than other whites
101. Mexican-Americans scored lower total than Orientals
102. Mexican-Americans scored lower total than American-Indians

*Chi-square formula taken from John R. Stockton, Introduction to Business and Economic Statistics, Cincinnatti, Ohio, 1966 pp 265-268.